

## CLAIMS

What is claimed is:

- 1           1. A method, comprising:  
2           receiving a plurality of data packets by a processing system via a network during  
3           a pre-boot runtime of the processing system, each of the plurality of data packets  
4           containing one of a corresponding plurality of data segments;  
5           parsing the plurality of data packets using a network protocol stack to extract the  
6           plurality of data segments during the pre-boot runtime, a portion of the network protocol  
7           stack executed in a hardware entity of the processing system; and  
8           transferring the plurality of data segments into system memory of the processing  
9           system during the pre-boot runtime.
- 1           2. The method of claim 1 wherein transferring the plurality of data segments into  
2           the system memory further comprises transferring the plurality of data segments directly  
3           into the system memory via a remote direct memory access protocol ("RDMA").
- 1           3. The method of claim 1 wherein the portion of the network protocol stack  
2           executed in the hardware entity includes a transmission control protocol over Internet  
3           protocol ("TCP/IP").
- 1           4. The method of claim 3 wherein the TCP/IP is implemented in the hardware  
2           entity using a TCP/IP Offload Engine ("TOE").

1           5. The method of claim 3 wherein the portion of the network protocol stack  
2     executed in the hardware entity further includes a user datagram protocol over Internet  
3     protocol (“UDP/IP”).

1           6. The method of claim 1, further comprising:  
2           pre-posting a buffer in the system memory of the processing system prior to  
3     receiving a first one of the plurality of data segments, the buffer having a size  
4     corresponding to a data block, the plurality of data segments comprising segments of the  
5     data block, and  
6           wherein transferring the plurality of data segments into the system memory  
7     includes transferring the plurality of data segments into the buffer in the system memory.

1           7. The method of claim 6 wherein the data block comprises a boot agent and a  
2     boot image, the boot agent containing instructions for the processing system execute to  
3     determine what to do with the boot image.

1           8. The method of claim 7 wherein the boot image comprises an operating system  
2     for executing on the processing system.

1           9. The method of claim 7, further comprising:  
2           executing the boot agent;  
3           copying the boot image onto a hard disk drive of the processing system;

4           resetting the processing system; and  
5           booting the processing system from the boot image copied to the hard disk drive.

1           10. The method of claim 9 wherein copying the boot image onto the hard disk  
2           drive includes copying over a previous boot image currently stored on the hard disk drive  
3           with the boot image to repurpose the processing system.

1           11. The method of claim 9 wherein copying the boot image onto the hard disk  
2           drive includes copying the boot image onto the hard disk drive having no previous boot  
3           image to provision the processing system with the boot image.

1           12. The method of claim 7, further comprising:  
2           executing the boot agent; and  
3           branching into the boot image from the boot agent to initialize an operating  
4           system embedded within the boot image; and  
5           executing the operating system.

1           13. The method of claim 1 wherein the hardware entity comprises a network  
2           interface card.

1           14. A machine-accessible medium that provides instructions that, if executed by a  
2           machine, will cause the machine to perform operations comprising:

3 receiving a plurality of data packets by a processing system via a network, each of  
4 the plurality of data packets containing one of a corresponding plurality of data segments;  
5 parsing the plurality of data packets using a network protocol stack to extract the  
6 plurality of data segments during a pre-boot runtime of the processing system, a portion  
7 of the network protocol stack executed in a hardware entity of the processing system; and  
8 transferring the plurality of data segments into system memory of the processing  
9 system during the pre-boot runtime.

1 15. The machine-accessible medium of claim 14, further providing instructions  
2 that, if executed by the machine, will cause the machine to perform the operations  
3 wherein transferring the plurality of data segments into the system memory further  
4 comprises transferring the plurality of data segments directly into the system memory via  
5 a remote direct memory access protocol ("RDMA").

1 16. The machine-accessible medium of claim 14, further providing instructions  
2 that, if executed by the machine, will cause the machine to perform the operations  
3 wherein the portion of the network protocol stack executed in the hardware entity  
4 includes a transmission control protocol over Internet protocol ("TCP/IP").

1 17. The machine-accessible medium of claim 16, further providing instructions  
2 that, if executed by the machine, will cause the machine to perform the operations  
3 wherein the TCP/IP is implemented in the hardware entity using a TCP/IP Offload  
4 Engine ("TOE").

1           18. The machine-accessible medium of claim 16, further providing instructions  
2           that, if executed by the machine, will cause the machine to perform the operations  
3           wherein the portion of the network protocol stack executed in the hardware entity further  
4           includes a user datagram protocol over Internet protocol (“UDP/IP”).

1           19. The machine-accessible medium of claim 14, further providing instructions  
2           that, if executed by the machine, will cause the machine to perform further operations,  
3           comprising:  
4           pre-posting a buffer in the system memory of the processing system prior to  
5           receiving a first one of the plurality of data segments, the buffer having a size  
6           corresponding to a data block, the plurality of data segments comprising segments of the  
7           data block, and  
8           wherein transferring the plurality of data segments into the system memory  
9           includes transferring the plurality of data segments into the buffer in the system memory.

1           20. The machine-accessible medium of claim 19, further providing instructions  
2           that, if executed by the machine, will cause the machine to perform the operations  
3           wherein the data block comprises a boot agent and a boot image, the boot agent  
4           containing instructions for the processing system execute to determine what to do with  
5           the boot image.

1           21. The machine-accessible medium of claim 20, further providing instructions  
2   that, if executed by the machine, will cause the machine to perform the further  
3   operations, comprising:

4           executing the boot agent;  
5           copying the boot image onto a hard disk drive of the processing system;  
6           resetting the processing system; and  
7           booting the processing system from the boot image copied to the hard disk drive.

1           22. The machine-accessible medium of claim 20, further providing instructions  
2   that, if executed by the machine, will cause the machine to perform the further  
3   operations, comprising:

4           executing the boot agent; and  
5           branching into the boot image from the boot agent to initialize an operating  
6   system embedded within the boot image; and  
7           executing the operating system.

1           23. A processing system, comprising:  
2           a processor to execute an operating system and application software;  
3           system memory communicatively coupled to the processor;  
4           a communication link communicatively coupled to the system memory and to  
5   couple to a network, the communication link including a network protocol offload engine  
6   to implement a portion of a network protocol stack; and

7           a flash memory unit communicatively coupled to the processor, the flash memory  
8   unit having stored therein a first pre-boot application to request transfer of a first data  
9   block from the network into the system memory, the first pre-boot application to interact  
10   with the network protocol offload engine to initiate transfer of the first data block during  
11   a pre-boot runtime of the processing system.

1           24. The processing system of claim 23 wherein the network protocol offload  
2   engine provides a transmission control protocol/internet protocol (“TCP/IP”) service to  
3   the first pre-boot application.

1           25. The processing system of claim 23 wherein the network protocol offload  
2   engine provides a remote direct memory access service to transfer the first data block  
3   directly into system memory without involving the processor of the processing system.

1           26. The processing system of claim 25 wherein the first pre-boot application pre-  
2   posts a buffer in the system memory having a size corresponding to the data block prior  
3   to initiating transfer of the first data block.

1           27. The processing system of claim 23 wherein the first pre-boot application is an  
2   extensible firmware interface driver executed during a pre-boot runtime of the processing  
3   system.

1           28. The processing system of claim 23 wherein the processing system comprises  
2   a processing blade to be mounted in a blade server chassis.

1           29. The processing system of claim 23 wherein the first pre-boot application is to  
2   request transfer of the first data block including a boot agent and a boot image, the boot  
3   image including an operating system.